Ontario Water Resources Commission
Division of Plant Operations.

ANNUAL REPORT 1965

# FERGUS

## water pollution control plant

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Ontario Water Resources Commission

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ONTARIO WATER RESOURCES COMMISSION

OFFICE OF THE GENERAL MANAGER

Members of the Fergus Local Advisory Committee,
Town of Fergus.

Gentlemen:

I am pleased to provide you with the 1965 Annual Report for the Fergus Water Pollution Control Plant, OWRC Project No. 58-S-23.

We appreciate the co-operation you have extended to our Operations staff throughout the year, and trust that continuation of this close association will ensure even greater progress in the sphere of water pollution control.

Yours very truly,

D. S. Caverly,
General Manager.

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MacDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to provide you with the 1965 Annual Report on the operation of the Fergus Water Pollution Control Plant, OWRC Project No. 58-S-23.

The report presents design data, outlines operating problems encountered during the year and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

# FOREWORD

This report provides useful information on the operating efficiency of this project during 1965. It is intended to act as a guide in gauging plant performance. To implement that aim, it includes detailed statistical and cost data, a description of the project and a summary of its operation during the year.

Of particular interest will be the cost data, which show the total cost to the municipality and the areas of major expenditure.

The Regional Operations Engineer is primarily responsible for the preparation of the report, and has compiled and arranged the material. He will be pleased to answer any questions regarding it. Other groups, however, were involved in the production, and these include the statistics section, the Drafting Section of the Division of Sanitary Engineering and the Division of Finance.

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

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# FERGUS

## water pollution control plant

operated for

THE TOWN OF FERGUS

by the

ONTARIO WATER RESOURCES COMMISSION

---

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DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director: C. W. Perry
Regional Supervisor: D. A. McTavish
Operations Engineer: B. W. Hansler

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# '65 REVIEW

A total of 208.34 million gallons of sewage was treated at the Fergus WPCP during the year at a total operating cost of $21,760.15. The operating cost per million gallons and the cost per pound of BOD removed were $104.45 and $0.03 respectively.

The average daily flow was 0.571 million gallons. In the summer the plant by-pass was changed to facilitate directing flows greater than 1.0 million gallons per day to the chlorine contact chamber rather than flows greater than 0.6 million gallons. Flows are directed at this point before reaching the plant flow meter. As was expected flow records after the by-pass was raised indicated a definite increase in flow receiving treatment at the plant. The average daily flows during October, November and December were 0.55, 0.80 and 0.90 million gallons respectively. The plant design flow is 0.6 million gallons per day. The plant design flow was exceeded 35 percent of the time during 1965.

The average raw sewage BOD and suspended solids concentrations of 346 ppm and 242 ppm exceeded the design value for each of 200 ppm, 70 percent and 62 percent of the time respectively. In addition the final effluent BOD and suspended solids concentrations exceeded the OWRC objective for each of 15 ppm, 42 percent and 44 percent of the time respectively. The average BOD and suspended solids reduction efficiencies were 96 percent and 94 percent respectively.

Under the supervision of head office engineers, the plant staff has operated a clean, attractive and efficient plant for the Town of Fergus.

# GLOSSARY

| | |
|---|---|
| BOD | biochemical oxygen demand (a measure of organic content) |
| cfm | cubic feet per minute |
| comminution | shredding of solids into small fragments |
| DWF | dry weather flow |
| effluent | outflow |
| flocculation | bringing very small particles together to form a larger mass (the floc) before settling |
| fps | feet per second |
| gpcd | gallons per capita per day |
| gpm | gallons per minute |
| grit | sand, dust, stones, cinders and other heavy inorganic material |
| influent | inflow |
| lin. ft. | lineal feet |
| mgd | million gallons per day |
| mlss | mixed liquor suspended solids |
| ppm | parts per million |
| ss | suspended solids |
| TDH | total dynamic head (usually refers to pressure on a pump when it is in operation) |

# HISTORY
# 1958 - 1965

INCEPTION

In 1958, the Town of Fergus and the Ontario Water Resources Commission initiated plans for the construction of a modern water pollution control plant.

The firm of Proctor and Redfern, Consulting Engineers, Toronto, Ontario, was engaged to prepare plans and specifications for the project.

APPROVAL

On December 19, 1958, the Town of Fergus signed an agreement with the Ontario Water Resources Commission to finance, construct and operate the plant.

CONSTRUCTION

Canadian Engineering & Contracting Company of Hamilton, Ontario, began construction in 1959 and by the summer of 1959, the Division of Plant Operations had placed the plant in full operation.

TOTAL COST

$277,393.00.



R. RANTON
CHIEF OPERATOR

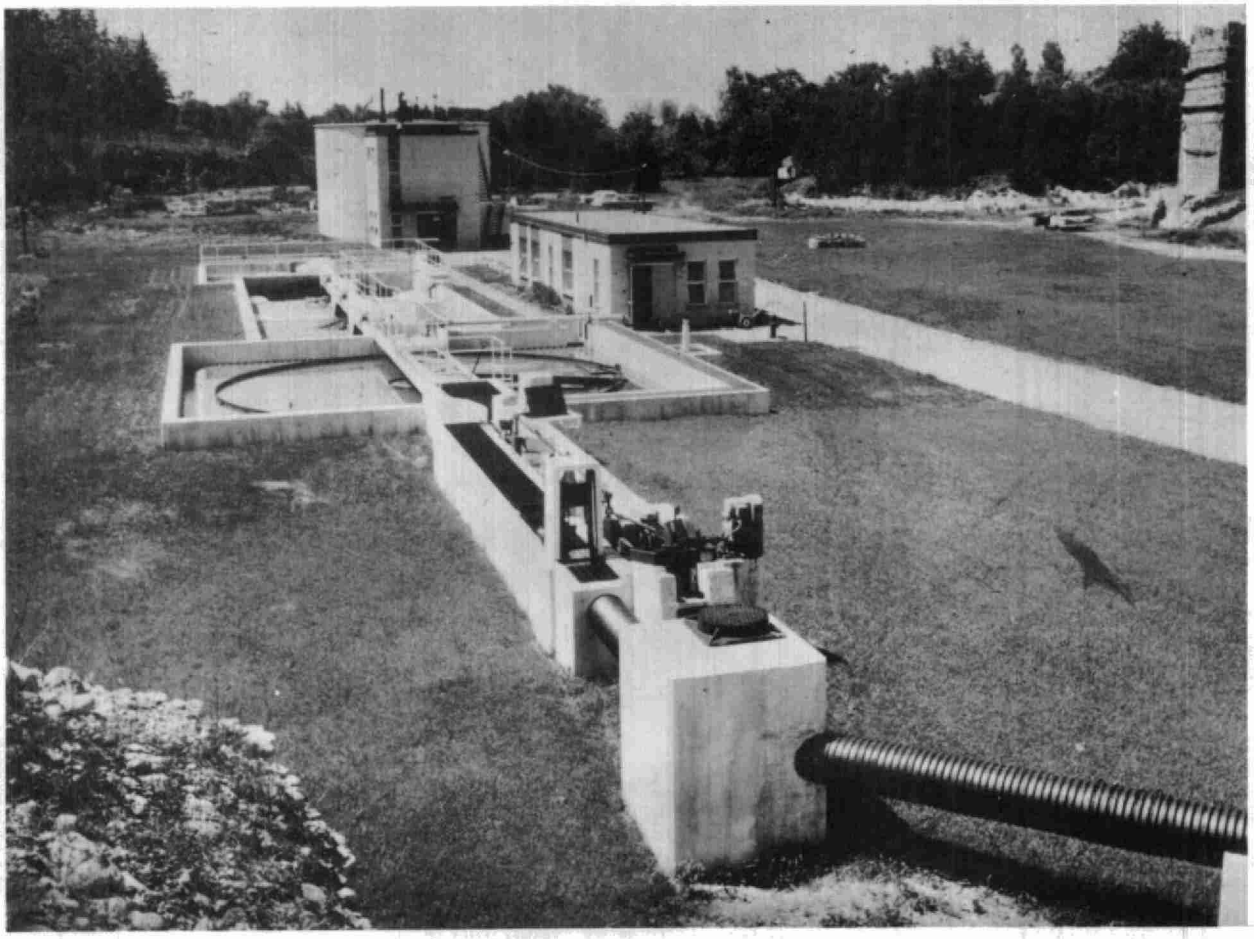
## Project Staff

Operator: Art Carlaw

### *COMMENTS*

The plant is staffed by the Chief Operator and one operator. This provides a coverage of 10 hours a day when both men are in the plant. Two one-hour inspections per day are made on Saturday and Sunday mornings.

Mr. Ranton is in the process of completing courses to obtain his Certificate of Qualification as a Sewage Works Operator.



# Description of Project

RAW SEWAGE

Sewage enters the plant site via an 18 inch sewer. It is coarse screened before passing through a barminutor which is designed to cut and shred the larger solids in the sewage. Sand and grit is then removed by a Dorr-Oliver Type T detritor. This unit has a manually cleaned bypass channel to facilitate repairs. After grit removal, the raw sewage passes through a 6 inch Parshall flume connected to a metering device which records the rate of flow and total flow for each day.

Storm flow in excess of about 1 MGD by-passes the influent works and is directed through two formerly existing septic tanks and the chlorine contact chamber before discharging to the river.

PRIMARY SEDIMENTATION TANK

Primary sedimentation is provided by one 40' square concrete tank with a 9' side wall depth equipped with a Dorr-Oliver rotary scraper mechanism. A detention time of 3.6 hours at design flow is provided. Flow in excess of 0.9 MGD is by-passed to the effluent sewer.

The function of this tank is to remove the organic solids that will settle or float. Scraping mechanisms collect this "raw sludge" which is pumped to the digestion tank.

## AERATION

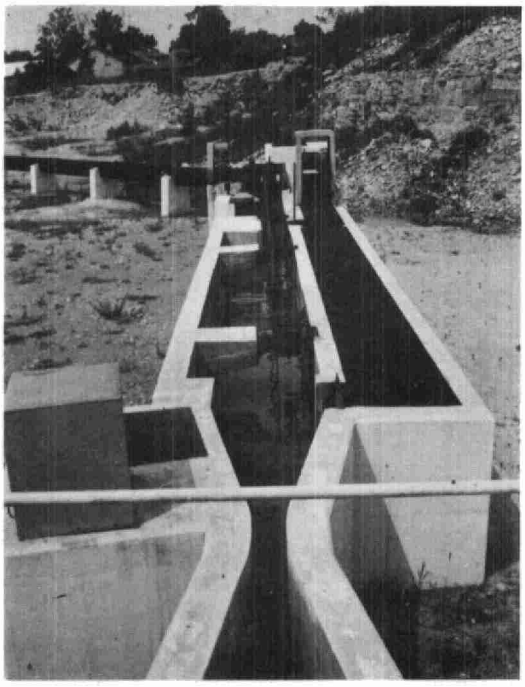
The aeration tank consists of three units each 24' square with a 10'8" side wall depth. A retention time of 4.41 hours is provided at the design flow of 0.6 MGD.

Air is supplied by "Simplex" mechanical aerators; each unit is provided with one of these high intensity aerators.

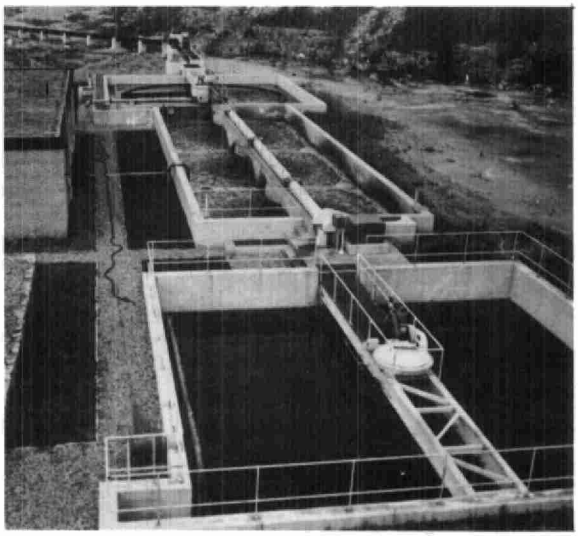
## FINAL SEDIMENTATION TANK

The aerated mixed liquor is retained for approximately 2.2 hours in a 35' square concrete final sedimentation tank with a 9' SWD. Activated sludge containing the solids absorbed by bacterial action in the aeration section settles out in this tank. A Dorr-Oliver rotary scraper mechanism is used to collect the sludge part of which is returned to the head of the aeration section for continued bacterial action and part of which is wasted to the digester.

The liquid which flows over the final clarifier weir plate is chlorinated in the chlorine contact chamber and flows to the river as plant effluent.



INFLUENT WORKS



AERATION TANK

## SLUDGE DIGESTION TANK

Single stage digestion is provided by the 35 ft. diameter and 22 ft. deep digester tank. This 22,700 cubic feet capacity digester is equipped with Dorr-Oliver floating cover and a draft tube mixer. The sludge is heated to the required temperature for digestion by a Pacific Flush Tank Company heat exchanger which is located in the digester building.

Methane gas is stored under the floating cover and us used as fuel.

The digested sludge may be directed to sand beds for drying and later disposed of on local farms as a soil conditioner. The drying beds have a total area of 7,200 sq. ft.

In 1964, provision was made for liquid sludge haulage with the result that the drying beds will not be used in the future. The liquid digested sludge is also used as a soil conditioner.

## CHLORINATION

Plant effluent is chlorinated in this chamber from a 200 lb/24 hours capacity Builders Providence gas chlorinator.

The contact chamber gives a contact time of 15 minutes.

# PROJECT COSTS

| | |
|---|---|
| NET CAPITAL COST (Final)<br>Long Term Debt to OWRC | $277,393.48 |
| Debt Retirement Balance at Credit<br>(Sinking Fund) December 31, 1965 | $ 58,558.20 |
| Net Operating | $ 21,760.15 |
| Debt Retirement | 10,064.00 |
| Reserve | 1,688.91 |
| Interest Charged | 15,563.70 |
| TOTAL | $ 49,076.76 |

## RESERVE ACCOUNT

| | |
|---|---|
| Balance at January 1, 1965 | $ 10,409.57 |
| Deposited by Municipality | 1,688.91 |
| Interest Earned | 494.40 |
| | $ 12,592.88 |
| Less Expenditures | (3,077.27) |
| Balance at December 31, 1965 | $ 9,515.59 |

## MONTHLY OPERATING COSTS

| MONTH | TOTAL EXPENDITURE | PAYROLL | CASUAL PAYROLL | FUEL | POWER | CHEMICAL | GENERAL SUPPLIES | EQUIPMENT | REPAIRS & MAINTENANCE | *SUNDRY | WATER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| JAN | 1433.90 | 679.06 | | 95.04 | 118.30 | 224.03 | 77.90 | 23.75 | | | 215.82 |
| FEB | 1267.33 | 679.06 | | | 109.39 | | 88.03 | 14.85 | 5.49 | 370.51 | |
| MARCH | 2188.30 | 679.06 | 129.72 | 103.46 | 91.91 | | 88.58 | | 183.94 | 911.63 | |
| APRIL | 1987.53 | 811.78 | 129.72 | 174.30 | 109.39 | 224.03 | 119.00 | | | 210.42 | 208.89 |
| MAY | 1617.18 | 1061.25 | | 67.45 | 98.43 | | 17.10 | 1.88 | 200.32 | 170.75 | |
| JUNE | 1740.17 | 707.50 | | 39.32 | 113.85 | 224.03 | 71.63 | 117.16 | 92.05 | 374.63 | |
| JULY | 2795.25 | 707.50 | | | 121.58 | 574.03 | 72.02 | 67.15 | 87.57 | 942.29 | 223.11 |
| AUG | 1716.77 | 707.50 | | | 117.13 | 80.77 | 76.46 | 341.69 | 32.25 | 360.97 | |
| SEPT | 1807.65 | 707.50 | | | 87.45 | 224.03 | 83.14 | 386.53 | 33.25 | 285.75 | |
| OCT | 2151.54 | 1064.70 | | | 98.43 | 224.03 | 58.86 | 4.07 | 190.51 | 306.19 | 204.75 |
| NOV | 1428.10 | 764.30 | | 103.17 | 102.89 | | 83.77 | | | 373.97 | |
| DEC | 1626.43 | 735.90 | | | 109.39 | 224.03 | 31.54 | | 32.50 | 493.07 | |
| TOTAL | 21760.15 | 9305.11 | 259.44 | 582.74 | 1278.14 | 1998.98 | 868.03 | 957.08 | 857.88 | 4800.18 | 852.57 |

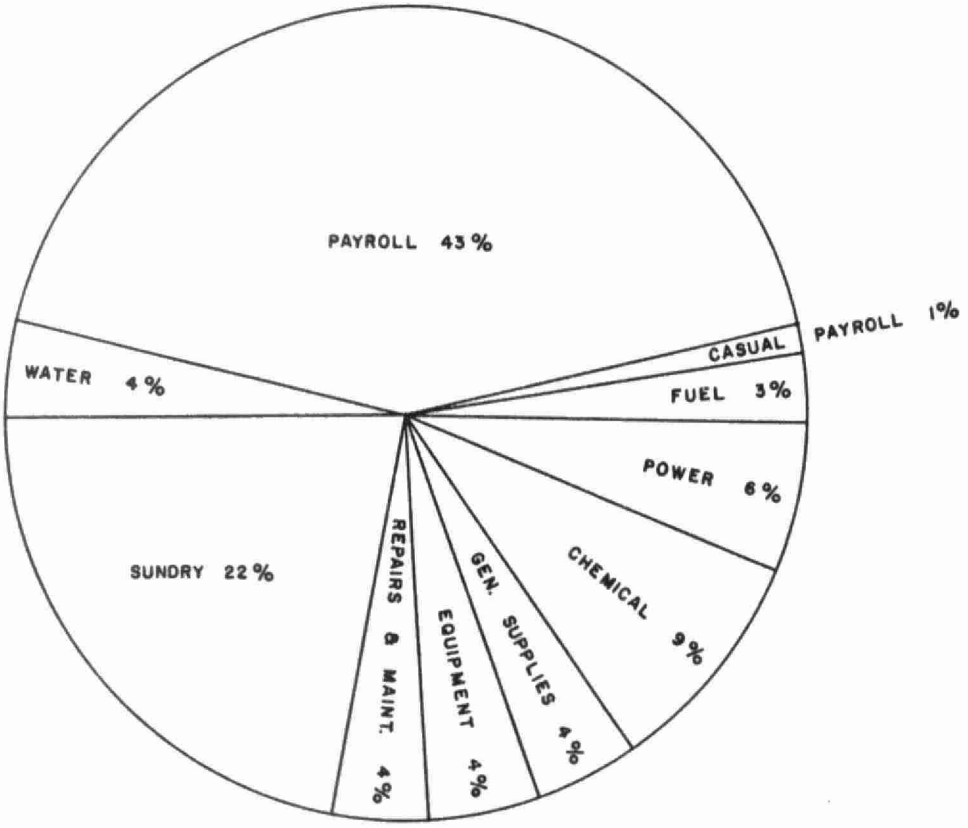
* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE $4,369.51
BRACKETS INDICATE CREDIT

## YEARLY OPERATING COSTS

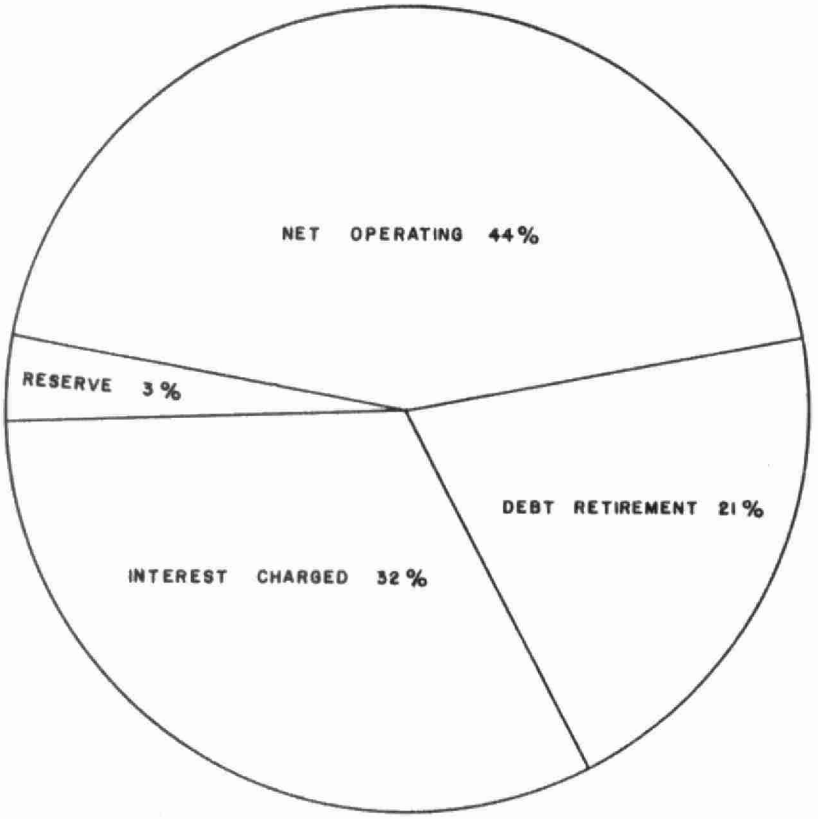
| YEAR | M.G. TREATED | TOTAL COST | COST PER FAMILY PER YEAR | COST PER MILLION GALLONS | COST PER L.B. OF BOD REMOVED |
|---|---|---|---|---|---|
| 1961 | 118.82 | $ 11201.00 | * $ 11.04 | $ 94.25 | 6 CENTS |
| 1962 | 106.77 | 12021.00 | 11.86 | 112.50 | 4 CENTS |
| 1963 | 143.12 | 12730.66 | 12.56 | 88.83 | 5 CENTS |
| 1964 | 180.12 | 19881.89 | 19.19 | 110.37 | 4 CENTS |
| 1965 | 208.34 | 21760.15 | 21.02 | 104.45 | 3 CENTS |

* BASED ON ANNUAL POPULATION ESTIMATE AND 3.9 PERSONS PER FAMILY

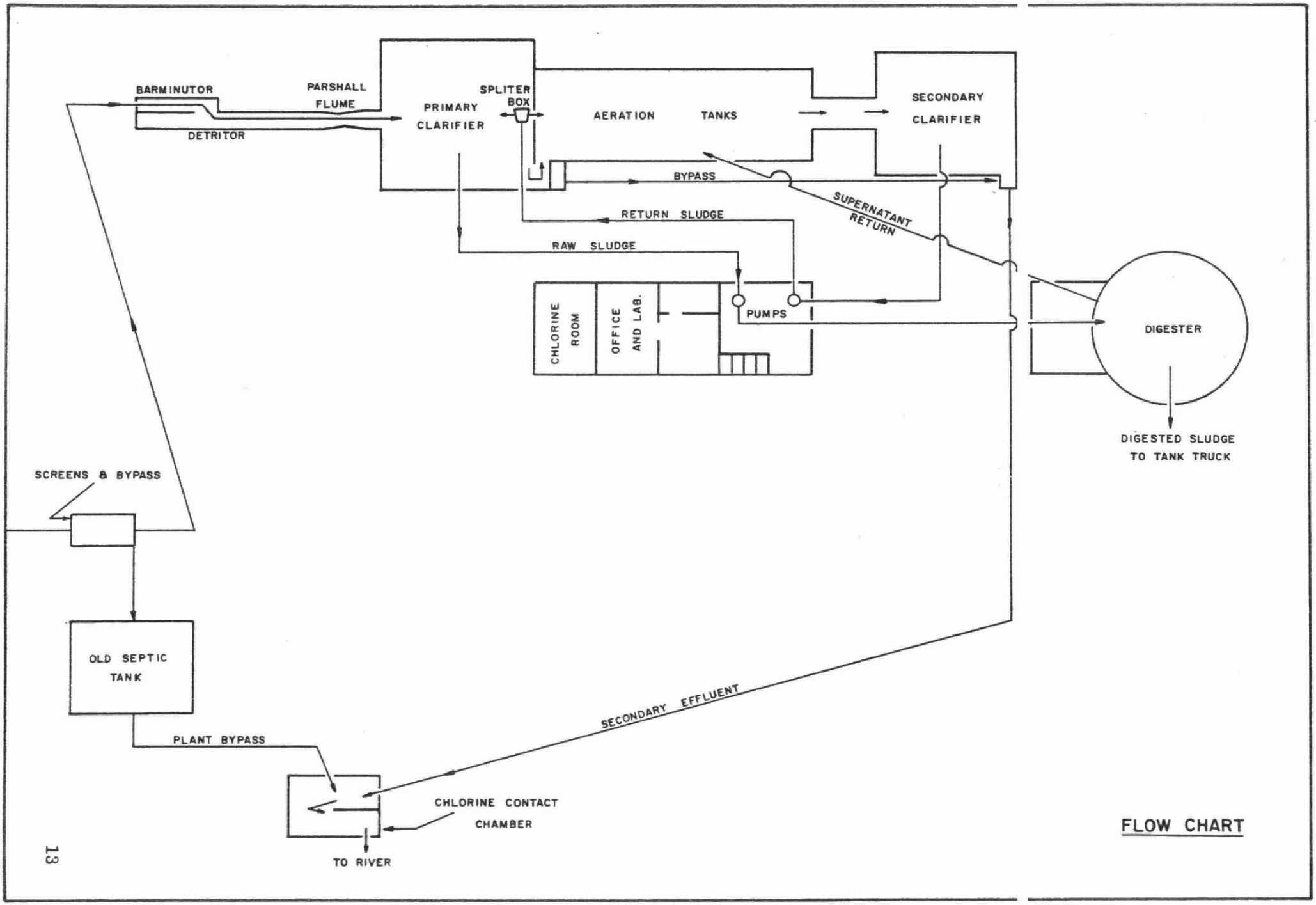
## 1965 OPERATING COSTS




## TOTAL ANNUAL COST



# Technical Section


BARMINUTOR
PARSHALL FLUME
DETRITOR
PRIMARY CLARIFIER
SPLITER BOX
AERATION TANKS
SECONDARY CLARIFIER
BYPASS
SUPERNATANT RETURN
RETURN SLUDGE
RAW SLUDGE
CHLORINE ROOM
OFFICE AND LAB.
PUMPS
DIGESTER
DIGESTED SLUDGE TO TANK TRUCK
SCREENS & BYPASS
OLD SEPTIC TANK
PLANT BYPASS
SECONDARY EFFLUENT
CHLORINE CONTACT CHAMBER
TO RIVER

FLOW CHART

# Design-Data

GENERAL

Type of Plant - Activated sludge.

Design Population - 4,700

Design Plant Flow - 0.6 MGD.

Per Capita Flow - 128 IGPD.

Five Day BOD -

| | | |
|---|---|---|
| Raw Sewage | - | 200 PPM |
| Removal | - | 90% |

Suspended Solids -

| | | |
|---|---|---|
| Raw Sewage | - | 200 PPM |
| Removal | - | 90% |

PRIMARY TREATMENT

Grit Removal

Dorr-Oliver Type T Detritor

Screening

18" Chicago model "B" barminutor.

Primary Sedimentation Tank

One - 40' square tank with circular mechanical sludge removal facilities.

AERATION SECTION

One - Size - 24' x 72' x 10'7" SWD.

Volume - 22,080

AERATION SECTION - Continued

Retention - 4.41 hours @ 0.6 MGD.

Type - Simplex Mechanical Aerators - Ames Crosta.

FINAL SEDIMENTATION TANK

One - Size - 35' square x 9' SWD equipped with Dorr-Oliver rotary scraper.

Volume - 11,025 cubic feet.

Retention - 2.2 hours @ 0.6 MGD and 25% return sludge.

CHLORINE CONTACT CHAMBER

One - volume - 911 cubic feet.

Retention - 15 minutes at design.

Capacity - 200 pounds per 24 hours.

DIGESTION SYSTEM

One - heated primary digester.

Size - 35' diameter x 22' SWD.

Volume - 22,700 cubic feet.

Capacity - 4.8 cubic feet per capita.

Dorr-Oliver floating cover.

Draft tube mixer.

# Process Data

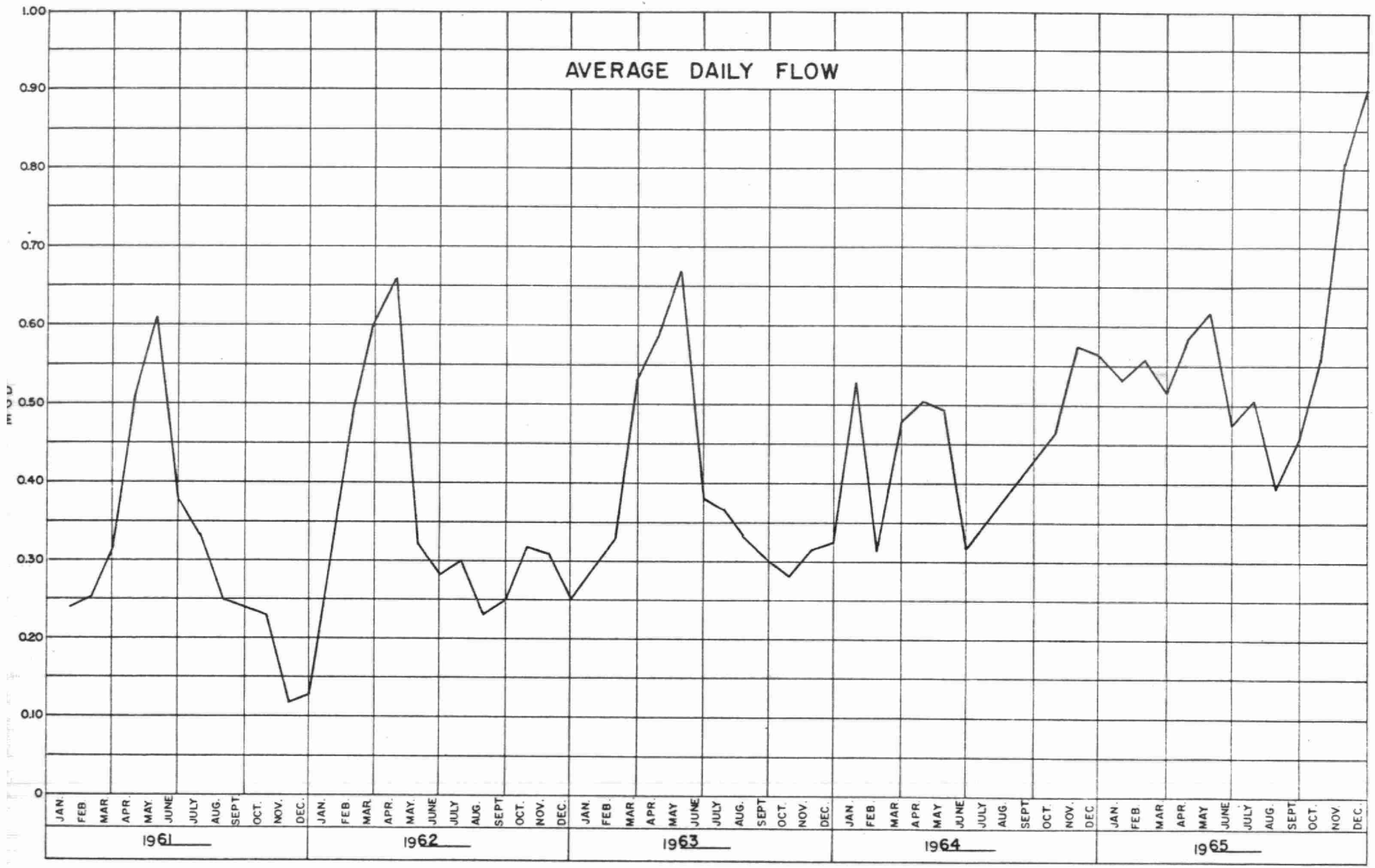
From the graph of the average daily flows, a trend to higher flows was evident during the latter part of 1965.

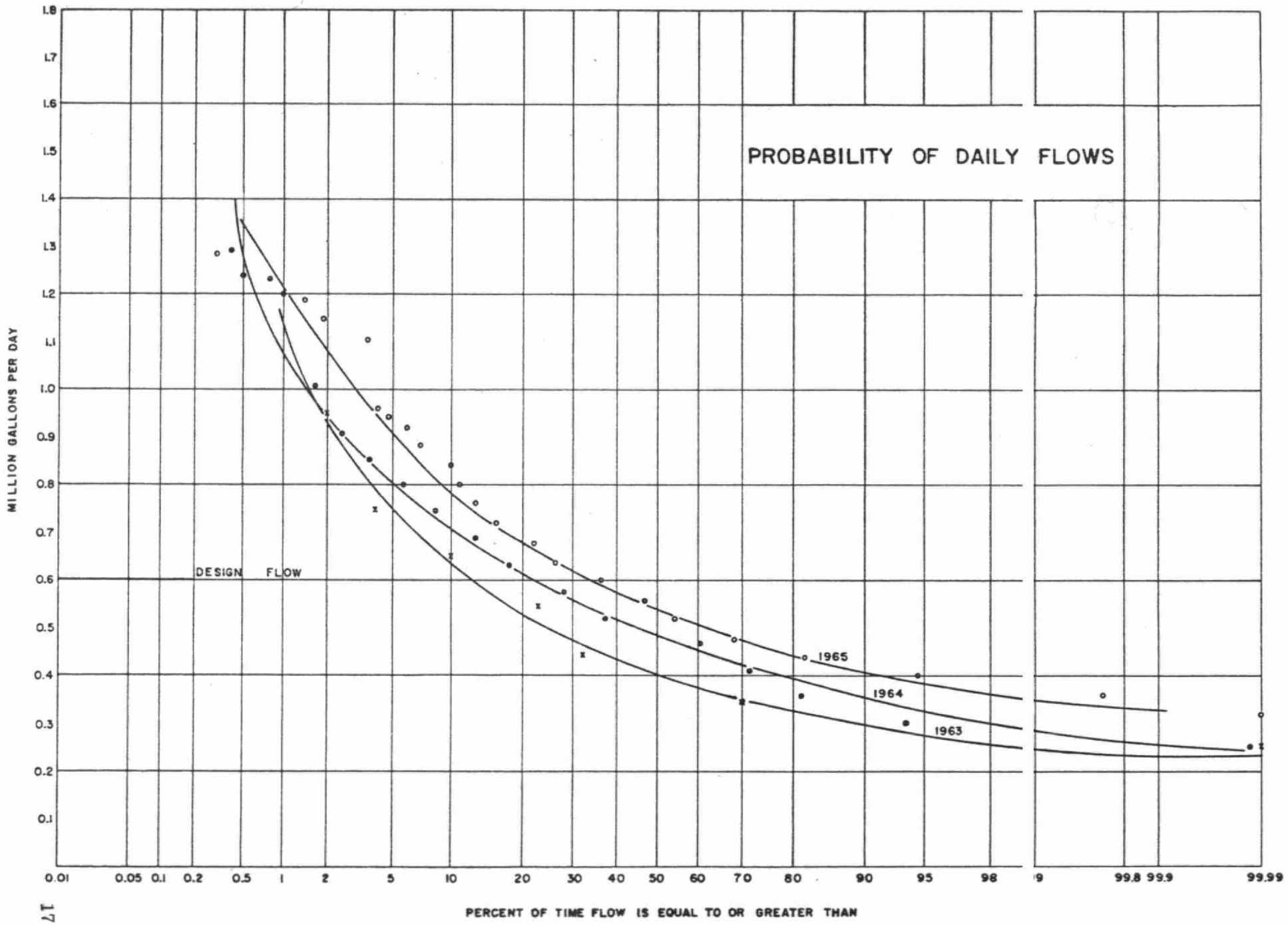
A plant by-pass was put into service to divert flows in excess of 1.0 mgd to the septic tank. Initially, the by-pass diverted flows greater than 0.6 mgd. However, it was discovered that there was a serious hydraulic load on the chlorine contact chamber and that the detention time in the chamber was adversely affected during periods of storm flow. Consequently, the weir plates on the by-pass were raised to give primary treatment to at least 1.1 mgd.

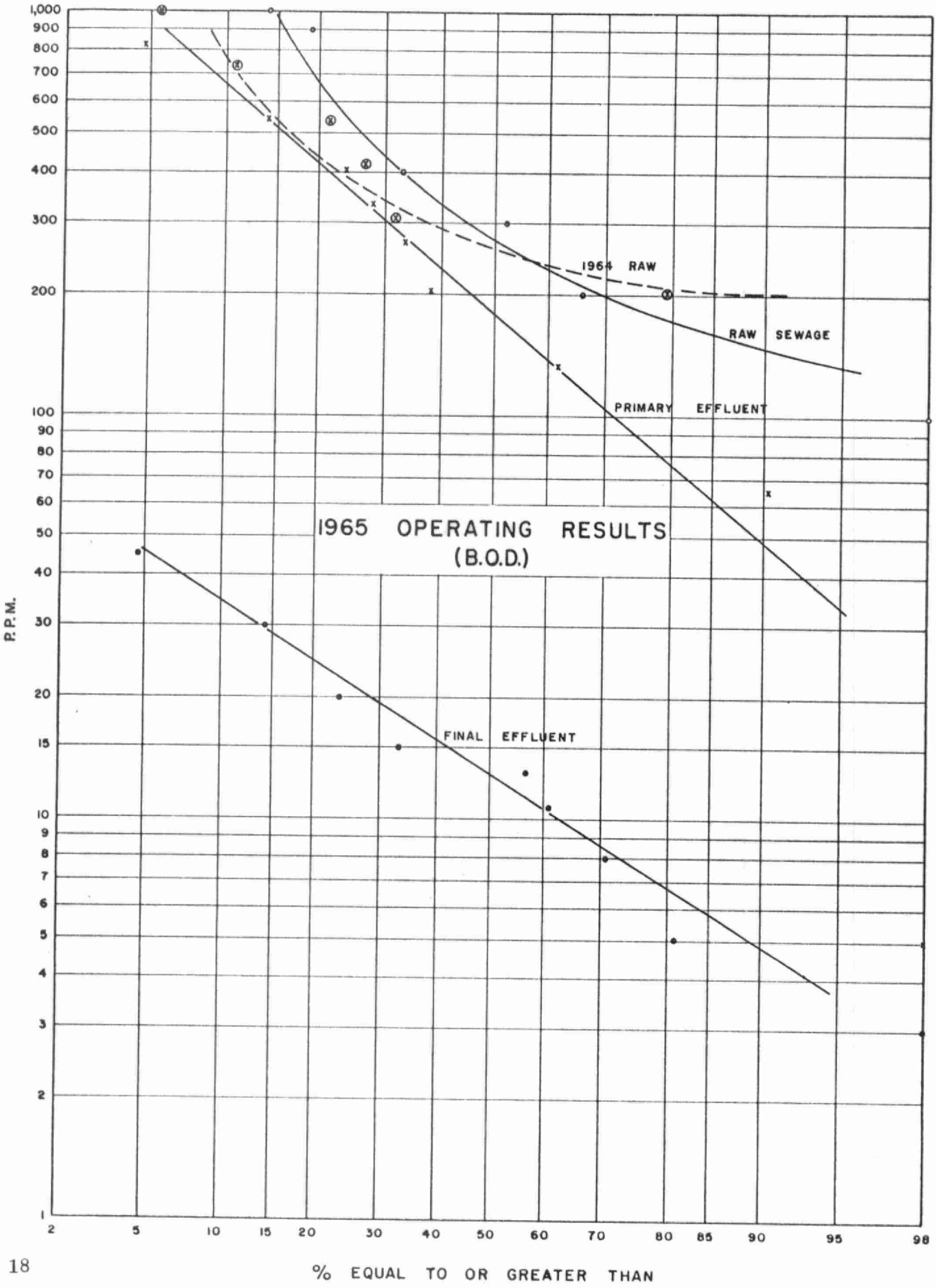
From the probability graph it can be seen that the design flow of 0.6 mgd was exceeded 35% of the time during 1965.

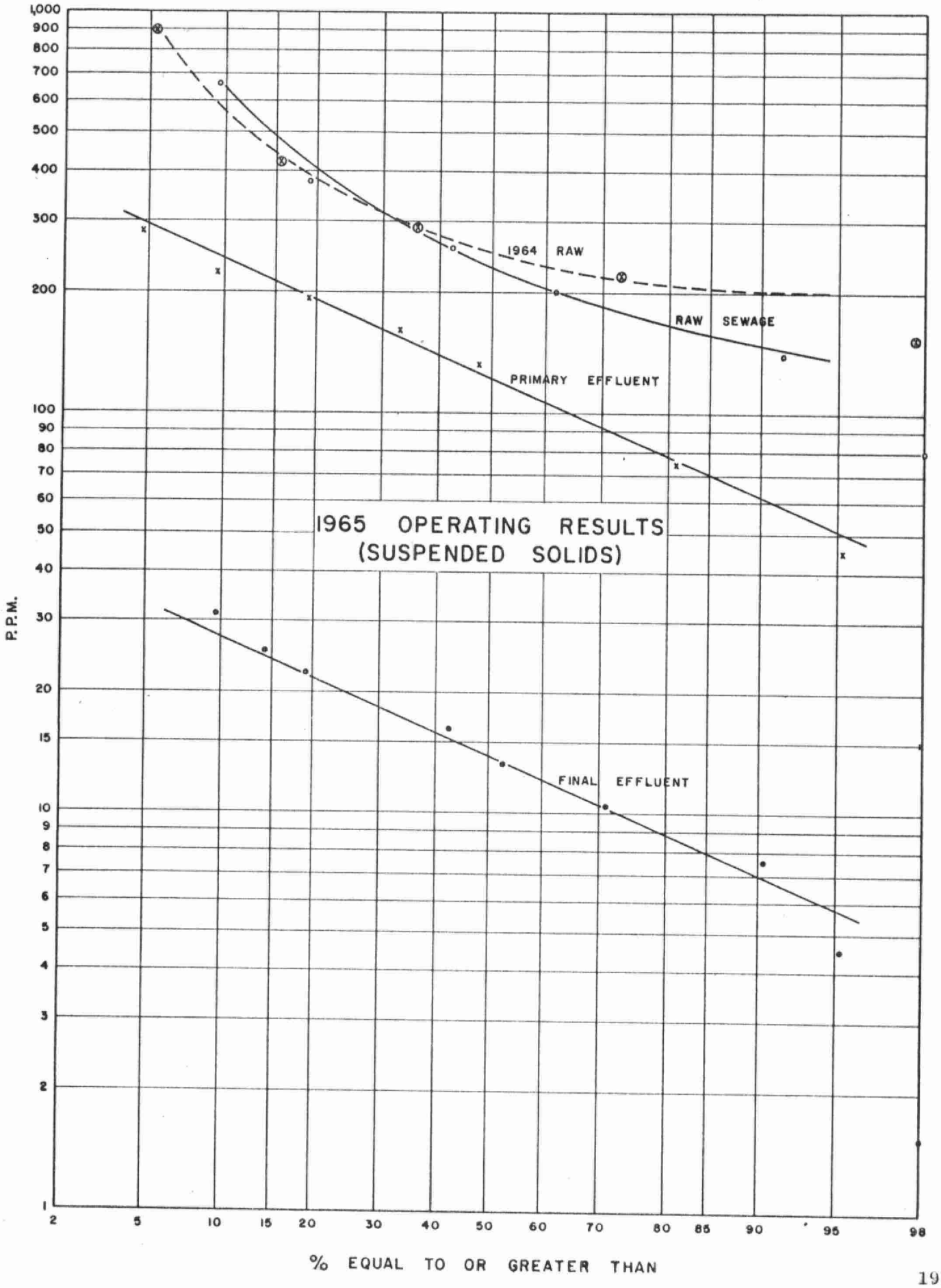
In 1964 the design flow was exceeded 22% of the time and in 1963 it was exceeded 13% of the time. This trend indicates that the plant is approaching its hydraulic capacity.

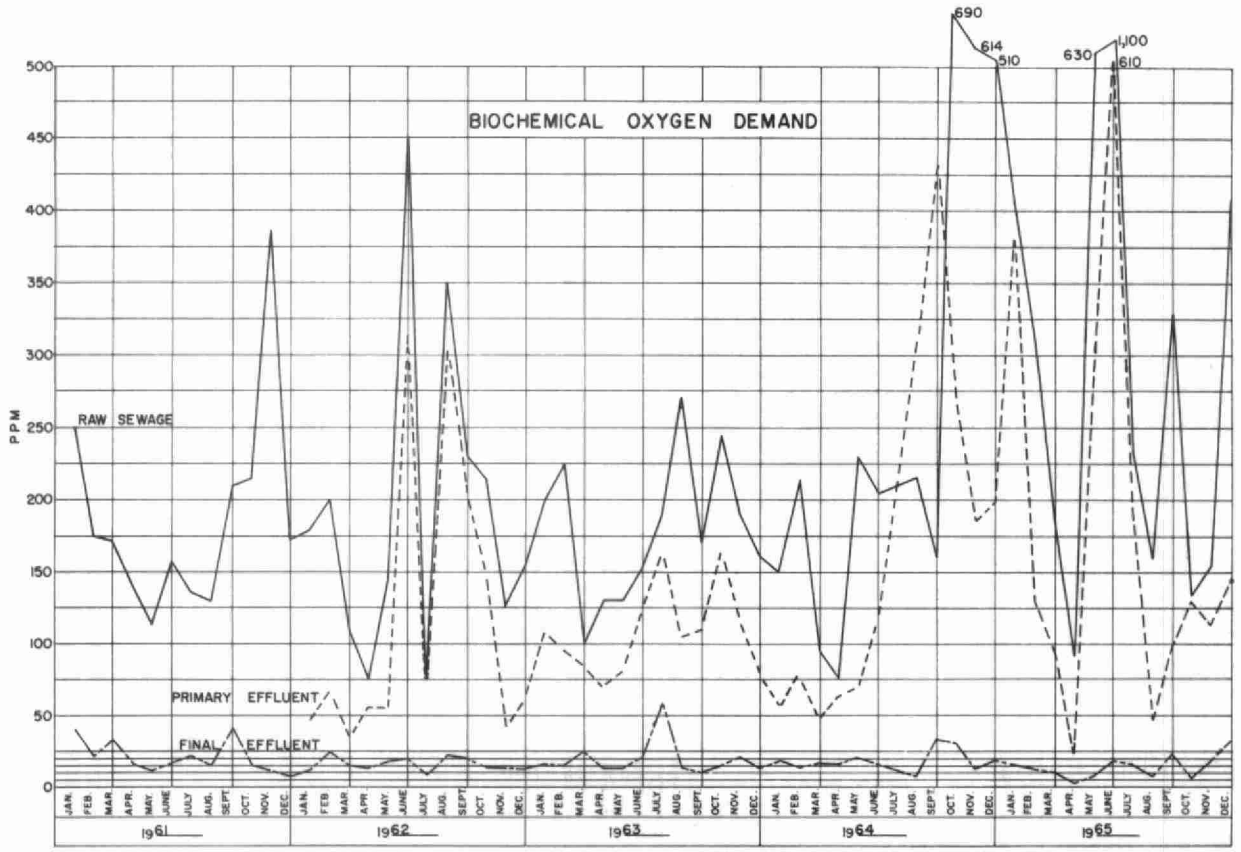
From the probability graphs it can be seen that the raw sewage BOD and suspended solids concentrations exceeded the design value for each of 200 ppm 70% and 62% of the time respectively. These values indicate that the plant was organically overloaded a large percent of the time. This fact is reflected in the final effluent BOD and suspended solids concentrations which exceeded the OWRC objective of 15 ppm, 42% and 44% of the time respectively.


AVERAGE DAILY FLOW
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1961
1962
1963
1964
1965

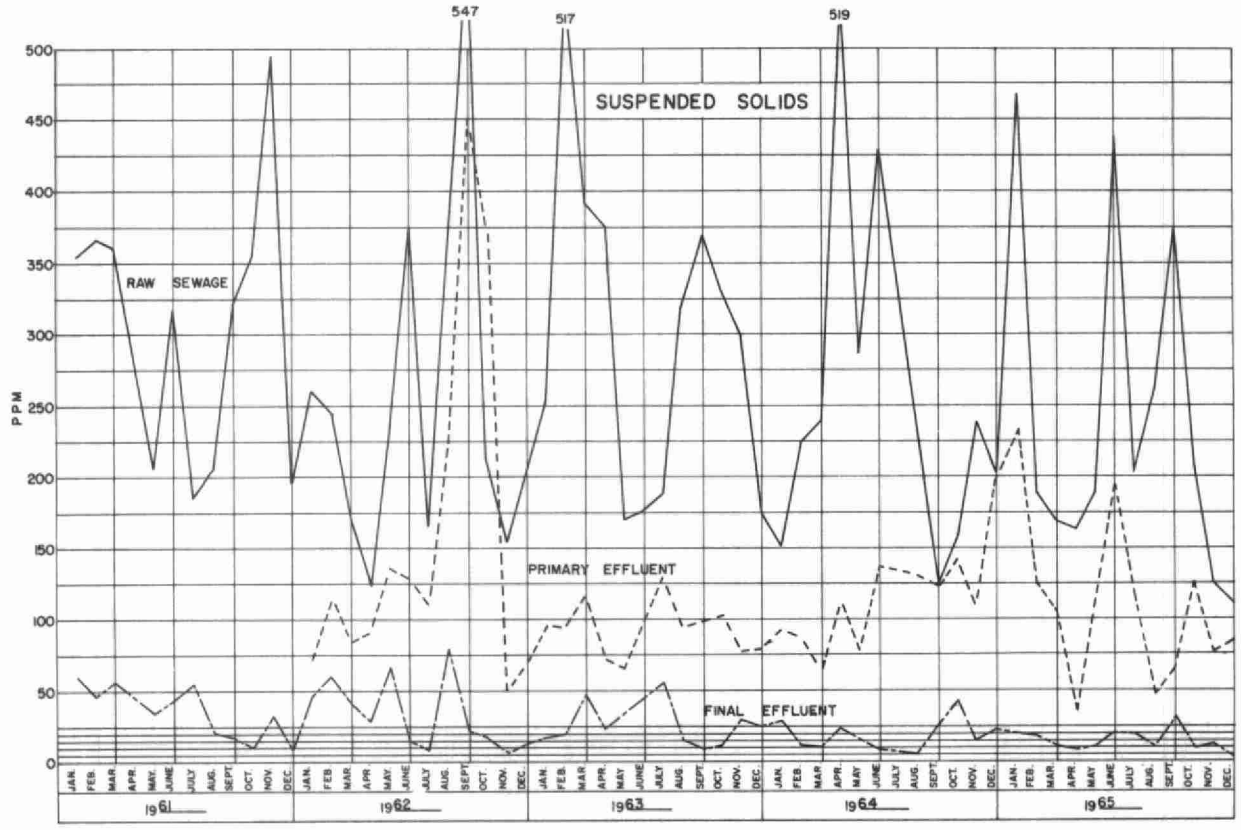

PROBABILITY OF DAILY FLOWS
MILLION GALLONS PER DAY
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
DESIGN FLOW
1965
1964
1963
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99
PERCENT OF TIME FLOW IS EQUAL TO OR GREATER THAN


1965 OPERATING RESULTS
(B.O.D.)
1964 RAW
RAW SEWAGE
PRIMARY EFFLUENT
FINAL EFFLUENT
P.P.M.
% EQUAL TO OR GREATER THAN
1,000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
15
10
9
8
7
6
5
4
3
2
1
2
5
10
15
20
30
40
50
60
70
80
85
90
95
98


1965 OPERATING RESULTS
(SUSPENDED SOLIDS)
1964 RAW
RAW SEWAGE
PRIMARY EFFLUENT
FINAL EFFLUENT
P.P.M.
% EQUAL TO OR GREATER THAN
1,000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
15
10
9
8
7
6
5
4
3
2
1
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10
15
20
30
40
50
60
70
80
85
90
95
98




# MONTHLY VARIATIONS



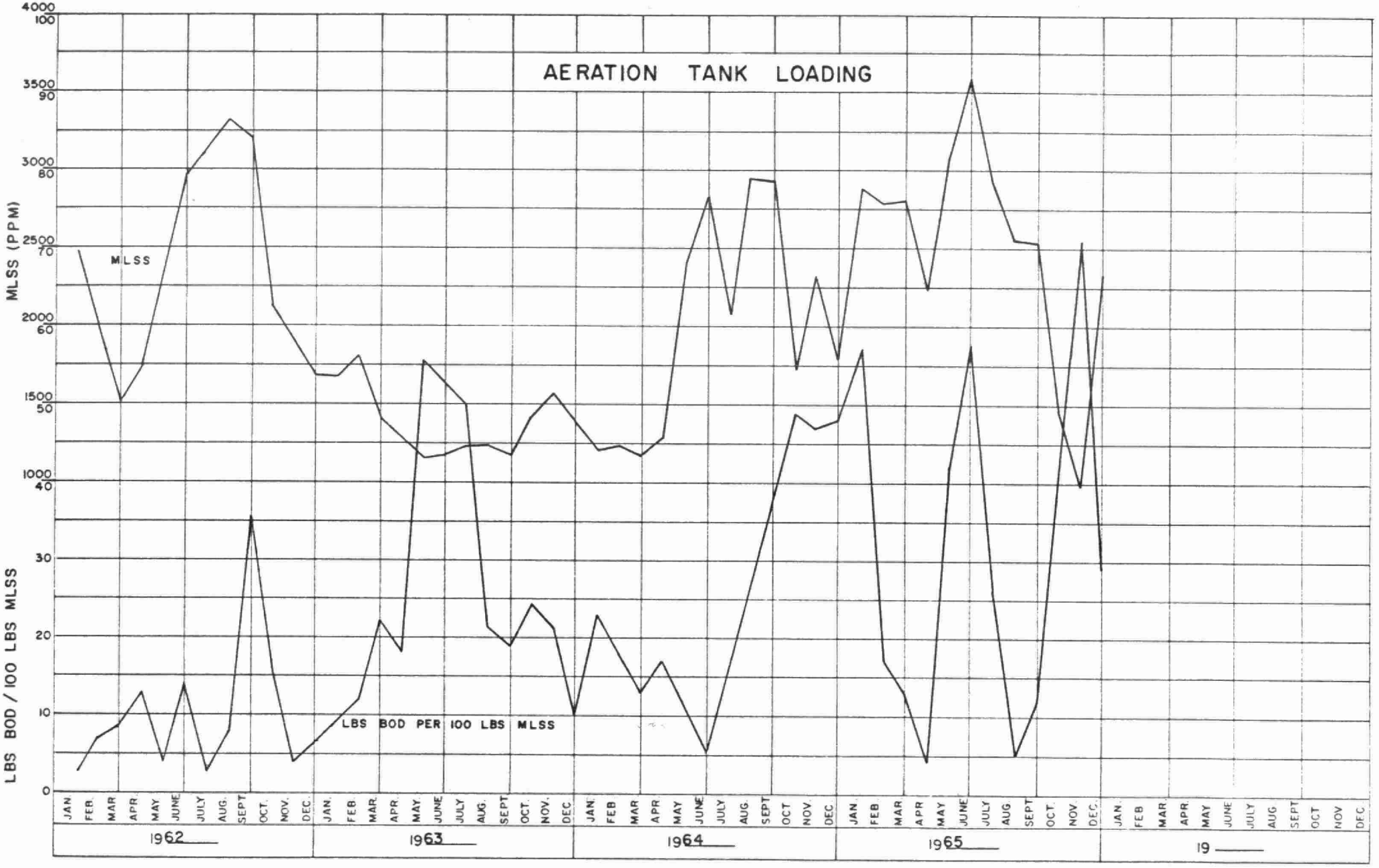
## GRIT, B.O.D AND S.S. REMOVAL

| MONTH | B. O. D. | | | | S. S. | | | | GRIT REMOVAL CU. FT. |
|---|---|---|---|---|---|---|---|---|---|
| | INFLUENT P.P.M. | EFFLUENT P.P.M. | % REDUCTION | TONS REMOVED | INFLUENT P.P.M. | EFFLUENT P.P.M. | % REDUCTION | TONS REMOVED | |
| JAN. | 405 | 16 | 96.0 | 32.0 | 470 | 20 | 95.5 | 37.1 | 25 |
| FEB. | 315 | 13 | 96.0 | 23.6 | 189 | 18 | 90.5 | 13.4 | 12 |
| MAR. | 188 | 11 | 94.0 | 14.2 | 169 | 12 | 93.0 | 12.6 | 16 |
| APR. | 92 | 3 | 97.0 | 7.8 | 163 | 8 | 95.0 | 13.7 | 43 |
| MAY | 630 | 8 | 98.5 | 59.6 | 190 | 10 | 94.5 | 17.2 | 4 |
| JUNE | 1100 | 19 | 98.0 | 77.2 | 441 | 21 | 95.0 | 30.0 | 10 |
| JULY | 235 | 17 | 92.5 | 17.1 | 204 | 20 | 90.0 | 14.5 | 13 |
| AUG. | 158 | 8.4 | 94.5 | 9.1 | 268 | 10 | 96.0 | 15.8 | 14 |
| SEPT. | 330 | 22 | 93.5 | 18.6 | 374 | 32 | 91.5 | 20.6 | 11.5 |
| OCT. | 132 | 5.8 | 95.5 | 10.8 | 208 | 10 | 95.0 | 16.9 | 18 |
| NOV. | 153 | 18 | 88.0 | 16.3 | 124 | 11 | 91.0 | 13.6 | 18 |
| DEC. | 410 | 32 | 92.0 | 52.8 | 110 | 2 | 98.0 | 15.1 | 17 |
| TOTAL | – | – | – | 345.8 | – | – | – | 237.5 | 201.5 |
| AVG. | 346 | 14 | 96.0 | 28.8 | 242 | 14 | 94.0 | 19.8 | 16.8 |

### COMMENTS

The average raw sewage BOD and suspended solids concentrations of 346 ppm and 242 ppm were considerably above the design value of 200 ppm. The organic overloading during the year was mainly due to an industrial wastes problem at the plant. For the major part of the year the raw sewage contained a great deal of creamery waste. Considering this, there was an excellent treatment efficiency reflected in the 96% reduction in BOD concentration and the 94% reduction in suspended solids concentration.

The average final effluent BOD and suspended solids concentrations of 14 ppm were slightly less than the OWRC objective of 15 ppm.

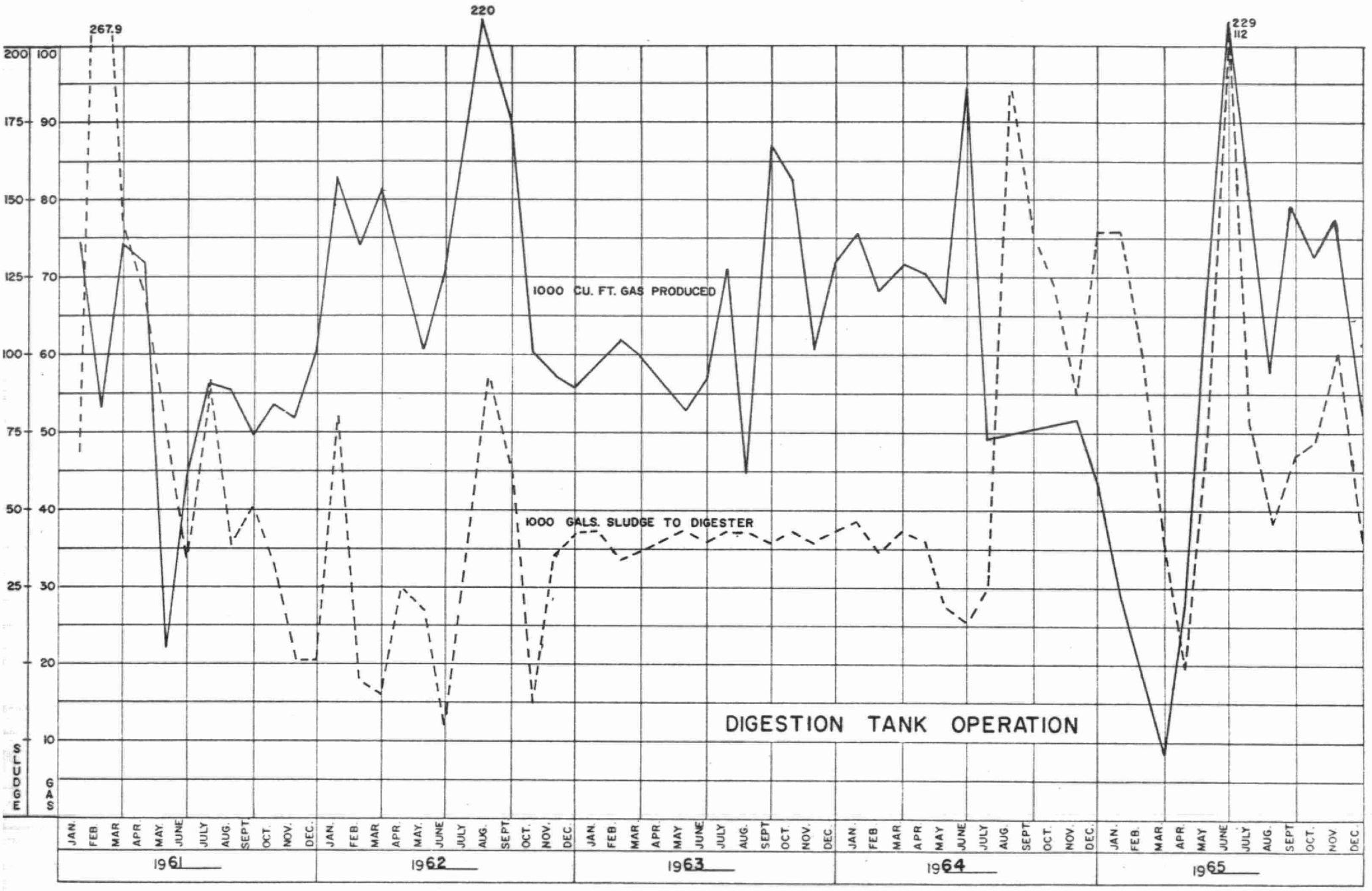

AERATION TANK LOADING
MLSS (PPM)
LBS BOD / 100 LBS MLSS
MLSS
LBS BOD PER 100 LBS MLSS
4000
3500
3000
2500
2000
1500
1000
100
90
80
70
60
50
40
30
20
10
0
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1962
1963
1964
1965
19

| MONTH | PRIM. EFFL B.O.D. P.P.M. | M.L.S.S. P.P.M. | LBS. BOD. PER 100 LBS. M. L. S. S. | CUBIC FEET AIR PER LB. B.O.D. REMOVED |
|---|---|---|---|---|
| JANUARY | 380 | 2822 | 57 | - |
| FEBRUARY | 130 | 2781 | 17 | - |
| MARCH | 95 | 2802 | 13 | - |
| APRIL | 24 | 2453 | 4 | - |
| MAY | 293 | 3075 | 41 | - |
| JUNE | 610 | 3570 | 58 | - |
| JULY | 192 | 2951 | 26 | - |
| AUGUST | 46 | 2567 | 5 | - |
| SEPTEMBER | 96 | 2288 | 12 | - |
| OCTOBER | 130 | 1481 | 39 | - |
| NOVEMBER | 112 | 992 | 71 | - |
| DECEMBER | 142 | 2343 | 30 | - |
| TOTAL | - | - | - | - |
| AVERAGE | 188 | 2510 | 31 | - |

## COMMENTS

The average loading of 31 lbs. of BOD per 100 lbs. MLSS was within the recommended loading for a conventional activated sludge plant of 20-40 lbs. of BOD per 100 lbs. MLSS However, from the table, it can be noted that at times the plant was subjected to high organic loadings. As mentioned previously, these high organic loads were caused by industrial wastes.

There were no problems experienced at the plant due to insufficient oxygen supply by the mechanical aerators even though the plant experienced greater than design loads.


267.9
220
229
112
1000 CU. FT. GAS PRODUCED
1000 GALS. SLUDGE TO DIGESTER
DIGESTION TANK OPERATION
DIGESTER GAS
200 175 150 125 100 75 50 25
100 90 80 70 60 50 40 30 20 10
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.
1961
1962
1963
1964
1965

## DIGESTER OPERATION

| MONTH | SLUDGE TO DIGESTERS | | | SLUDGE FROM DIGESTERS | | | GAS PRODUCED 1000'S Cu. Ft. |
|---|---|---|---|---|---|---|---|
| | 1000'S CU.FT. | % SOLIDS | % VOL. MAT. | 1000'S CU.FT. | % SOLIDS | % VOL. MAT | |
| JAN. | 12.20 | 0.85 | - | 15.71 | - | - | 29.80 |
| FEB. | 9.72 | - | - | 8.10 | - | - | * - |
| MAR. | 5.90 | 4.36 | - | 5.21 | - | - | * - |
| APR. | 3.19 | 6.84 | 3.88 | 2.98 | 4.91 | 2.36 | * - |
| MAY | 7.85 | 4.07 | - | 8.07 | - | - | 116.26 |
| JUNE | 17.99 | 3.33 | - | 19.48 | - | - | 229.55 |
| JULY | 8.18 | - | - | 8.07 | - | - | 152.46 |
| AUG. | 6.22 | - | - | 6.49 | - | - | 94.16 |
| SEPT. | 7.62 | 6.19 | 3.66 | 7.90 | - | - | 149.57 |
| OCT. | 7.87 | - | - | 8.60 | - | - | 132.46 |
| NOV. | 9.26 | - | - | 10.70 | - | - | 148.69 |
| DEC. | 5.84 | - | - | 9.83 | - | - | 81.01 |
| TOTAL | 101.84 | - | - | 111.14 | - | - | *1504.76 |
| AVG. | 8.49 | 4.27 | 3.77 | 9.26 | 4.91 | 2.36 | 126.00 |

* Feb.-Apr. meter out of service. Total prorated on available data.

## COMMENTS

The installation of a new positive displacement pump was completed in 1965. As well as providing more efficient pumping, this new pump allowed a more accurate measurement of the raw sludge pumped from the primary clarifier to the digester.

A total of 101,840 gallons of raw sludge was pumped to the digester and a total of 111,140 gallons of digested sludge was removed according to the values shows in the table. The discrepancy between these values indicates that the measure of the amount of digested sludge removed from the digester is inaccurate. This measurement is obtained by tabulating the number of loads of liquid digested sludge removed by tank truck every month.

Rather than use the sludge drying beds, liquid sludge haulage was continued during 1965. This method of sludge disposal was utilized to eliminate the possibility of odorous conditions prevailing at the plant.

The gas production for 1965 averaged 126,000 cubic feet per month which represented a production increase over 1964. This increased gas production can be attributed to the increased raw sludge pumping and a more efficient digester operation.

## CHLORINATION

| MONTH | PLANT FLOW (MG) | POUNDS CHLORINE | DOSAGE RATE (P.P.M) |
|---|---|---|---|
| JANUARY | 16.477 | 585 | 3.55 |
| FEBRUARY | 15.664 | 717 | 4.58 |
| MARCH | 16.001 | 988 | 6.17 |
| APRIL | 17.623 | 899 | 5.10 |
| MAY | 19.150 | 980 | 5.12 |
| JUNE | 14.281 | 1381 | 9.67 |
| JULY | 15.722 | 1216 | 7.73 |
| AUGUST | 12.215 | 1130 | 9.25 |
| SEPTEMBER | 12.077 | 1321 | 10.94 |
| OCTOBER | 17.066 | 1010 | 5.92 |
| NOVEMBER | 24.135 | 948 | 3.93 |
| DECEMBER | 27.925 | 1146 | 4.10 |
| TOTAL | 208.336 | 12321 | - |
| AVERAGE | 17.361 | 1027 | 5.91 |

## COMMENTS

Chlorination of the final effluent was practiced year-round in 1965. The average dosage rate of 5.08 ppm was sufficient during the year to maintain the minimum chlorine residual of 0.5 ppm. It can be noted that during the summer the dosage rate was higher. This was due to the fact that pre-chlorination of the raw sewage was practiced to reduce the odour problems caused by the industrial waste flows.

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# CONCLUSIONS

This report has outlined in detail the operational data for this plant during 1965. From the data presented, it can be seen that the plant periodically was organically and hydraulically overloaded. The excellent treatment efficiency experienced during the year was due to the efforts of the plant staff who worked closely with the head office staff of Division of Plant Operations of the OWRC.

# RECOMMENDATIONS

In order to ensure that the efficiency c
is maintained, the plant staff and the
continue their vigilance of the plant o

The Town of Fergus should control
sanitary sewer system by enforcing
should reduce the organic overloads e

As the plant is approaching its design
to plant expansion in the immediate fu

Date Due

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TD227/F47/W38/1965/MOE
Ontario Water Resources Co
Fergus water
pollution control plant: astj
annual report c.1 a aa
1965

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